

*Application Serial No. 10/709,244
Amendment filed June 24, 2008*

This makes it possible to compare any unintentional defect in the exposure area with the intentional evaluation pattern, under the same inspection wavelength, and it allows an exact judgment as to whether or not the unintentional defects will adversely affect the transfer of the device pattern (specification paragraph 0022). Consequently, it allows an exact judgment as to whether the defects need correction.

The previous rejection has been overcome and a new rejection, including one additional reference (Tsudaka) has been made. Now claims 1, 2, 4-7, and 9-16 are rejected under 35 U.S.C. § 103(a) as unpatentable over Toyama '576 (previously applied) in view of Sawada '911 (previously applied) and further in view of Tsudaka, US 6,014,456. This rejection is respectfully traversed.

Tsudaka. The Examiner asserts Tsudaka for disclosing arranging a plurality of evaluation patterns, and applies the Description of Related Art and the Abstract. With respect, this feature is not disclosed.

Tsudaka's object is to correct for optical distortion in a lens that is used for projecting a photomask onto a semiconductor resist material (col. 1, lines 24-27). As the Examiner knows, any lens is subject to various distortions, such as coma, astigmatism, and pincushion or barrel distortion, which are caused by displacements of the focal points from their true positions. In pincushion and barrel distortions, there is a nonlinearity in the radial distance from the optical axis, so that straight lines are bent (except lines radial from the optical axis); with astigmatism, X and Y displacements in the image plane are not proportional, and squares turn to rectangles; and in coma there is no single, flat focal plane, so the image points are smeared.

These are all global distortions of the exposure area.

*Application Serial No. 10/709,244
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Tsudaka's Abstract describes a method of correcting distorted placement of image points. The other text that is applied by the Examiner describes Tsudaka's prior art, which includes several methods: trial and error (col. 1, line 36); light proximity effect correction (col. 1, lines 43-48); technologies for automatically correcting mask patterns (col. 1, line 59); and simulation of the light intensity (col. 2, line 2). All of this disclosure relates to global distortion of the exposure area.

With respect, none of the applied text discloses the Applicant's feature, namely, evaluation patterns corresponding to and arranged by type of defect. The Examiner is invited to consider that the term "evaluation pattern" does not appear anywhere in the patent. Tsudaka's patterns are described by the adjectives "mask," "desired design," "desired," and "transfer" (Abstract), and also by "resist," "modification," "optimal mask," "limited," "irregular," and "line" (applied body text). None of these words implies testing or measuring and none implies the Applicant's *evaluation* pattern. They are simply descriptive ("resist"), or else relate to the final result ("desired"), of the whole exposure area.

The Examiner is also invited to consider that Tsudaka teaches evaluation *points* (not *patterns*) which are all within the main pattern, and therefore are inside the exposure area. It is respectfully submitted that Tsudaka fails to disclose any plurality of patterns, and fails to disclose any evaluation patterns, and therefore fails to disclose any plurality of evaluation patterns—whether arranged by type as claimed, or arranged any other way.

Toyama. The Examiner asserts that Toyama's paragraphs 0006, 0041, and 0047 disclose that evaluation patterns correspond to types of defects that might be generated in the exposure area. The Applicant has again carefully reviewed these turgid paragraphs, but still sees only

*Application Serial No. 10/709,244
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manipulation of the exposure-area pattern. No evaluation pattern, as distinct from the exposure pattern, is seen. The phrase "evaluation pattern" does not occur in the reference.

Toyama refers to "wafer exposure simulation" in applied paragraph 0001, and applied paragraph 0006 states that a "photomask having corrected pattern different from design data is produced by adding correction to design data so as to change shapes of patterns on a photomask into shapes different from design data." With respect, this is an exposure pattern changed to correct error, not an evaluation pattern outside the exposure area.

Toyama merely teaches that oversize processing and undersize processing are given to pattern data. Therefore, Toyama fails to disclose defective evaluation patterns correspond to types of defects that might be generated in the exposure area.

Response to Arguments. The Examiner asserts that the Applicant's earlier remarks about Toyama are moot in view of the new grounds of rejection, but the rejection is the same except that Tsudaka is applied. The Applicant's earlier arguments concerned points that are still at issue.¹

Combination. Toyama is concerned with errors caused by diffraction effects rather than by lens distortion (paragraph 0004), and therefore would not have been combined with Tsudaka. With respect, there is no basis for predicting the present claims from the applied art.

Reconsideration is requested. The teachings of Toyama, Sawada, and Tsudaka together, even if combined (not admitted), could never reach the Applicant's feature, that the

¹ The Applicant wrote: "Toyama teaches *predicting* errors that will be caused by "defocus" or "errors of the production of photomask" and manufacturing the mask in anticipation of these errors. The applied paragraphs are not seen to mention so much as a single feature of claim 3, and the Applicant notes that the Examiner has not cited the applied paragraphs *specifically* in support of different types of defects being in a specific area or arranged in any way whatsoever, much less arranged according to the type of defect."

*Application Serial No. 10/709,244
Amendment filed June 24, 2008*

evaluation patterns correspond to types of defects possibly generated in the exposure area, and arranged by types of the defect.

In view of the aforementioned amendments and accompanying remarks, claims, as amended, are in condition for allowance, which action, at an early date, is requested.

Respectfully submitted,

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